



Memorandum

To: *Stephanie Vaughn (USEPA)
Elizabeth Buckrucker (USACE)*

From: *Scott Kirchner (CDM Smith)
George Molnar (CDM Smith)*

Date: *December 21, 2012*

Re: *Status Report (December 2012)
CPG Oversight of Chemical Water Column Monitoring
Lower Passaic River Restoration Project*

On behalf of the United States Environmental Protection Agency (EPA) and the United States Army Corps of Engineers (USACE), Kansas City District, CDM Federal Programs Corporation (CDM Smith) is providing oversight of the Cooperating Parties Group (CPG) remedial investigation/feasibility study (RI/FS) field activities associated with chemical water column monitoring (CWCM), and the collection of chemical data in the Lower Passaic River (LPR).

CDM Smith oversight activities were conducted December 10, 11 and 17, 2012. Oversight included observations of the collection of samples in the LPR and tributaries in support of the last of five routine small volume events, and the first high volume CWCM event. In addition, CDM Smith also collected split samples at select locations. All activities were conducted in accordance with the CPG *Quality Assurance Project Plan/Field Sampling Plan Addendum (QAPP/FSP)*, *Remedial Investigation Water Column Monitoring/Small Volume Chemical Data Collection*, Revision 2, August 2011 and the *QAPP, Remedial Investigation Water Column Monitoring/High Volume Chemical Data Collection*, June 2012. The Louis Berger Group Inc. (LBI) conducted oversight of CWCM activities in Newark Bay. Oversight observations made by LBI staff are not included in this summary.

Photographs of field activities are in Attachment 1. Copies of the logbook notes are in Attachment 2. Copies of the chain of custody records are in Attachment 3.

Routine Event General Summary

Oversight consisted of observations of in-river and field facility activities conducted by CPG contractors AECOM. Ocean Surveys Incorporated (OSI) provided vessel and sampling support.

All sample locations were verified by oversight staff using the map provided in CPG's QAPP/FSP. Review of the United States Geological Survey (USGS) gauging station at Dundee Dam indicated that maximum flow approached 700 cubic feet per second (cfs). This flow rate was well within the criteria required for this event to be considered a routine event.

Per AECOM's QAPP, if river flow velocities are greater than (>) 250 cfs at Dundee Dam, samples would be collected at river mile (RM) 10.2 instead of 13.5. In addition, if flow at the dam is less than (<) 1,000

cfs, samples would be collected at locations identified as Tidal 1 and Tidal 2 based on the location of the salt wedge instead of RMs 4.2 and 6.7 if flows were > 1000 cfs.

AECOM followed the aforementioned approach for sampling based on river velocity. In summary, the following locations were sampled during this event:

- Dundee Dam
- RM 0
- RM 1.4
- RM 10.2
- RM 17.5
- Saddle River
- Second River
- Third River
- Tidal 1 which consisted of RMs 2.5, 4.63 (sampled twice), and 6.75
- Tidal 2 which consisted of RMs 1.95, 3.01 (sampled twice), and 4.08

Upon arrival at each RM location during routine sampling, CPG lowered a YSI water quality instrument to the bottom of the riverbed and then raised it while simultaneously collecting water quality data in real time. Attached to the instrument was sampling tubing attached to a remote pump located on the sampling vessel. After a full "cast", the instrument was lowered to approximately 3 feet above river bottom, and the pump was activated allowing the tubing to purge followed by sample collection. Once all samples were collected at the lower depth, the instrument was raised to approximately 3 feet below river surface, the tubing was allowed to purge and another sample set was collected.

A similar approach was used above Dundee Dam and at the tributaries; however, samples were only collected from a single depth, approximately midway in the water column. The YSI and sampling tubing were deployed either off a bridge such as at Saddle River, or crews waded in such as at the Second and Third Rivers. Sampling above Dundee Dam was conducted from a boat.

For this sampling event, CDM Smith accepted split samples from the following locations:

- Second River (non-tidal)
- RM 10.2 (during maximum ebb tide)
- RM 1.4 (during maximum ebb tide)
- Tidal 2, RM 1.95 (during low slack tide)

Throughout each day, samples were collected and shuttled back to the CPG facility for processing and packing. Oversight of activities at the CPG field facility indicated a relatively organized system of sample logging, labeling, chain of custody generation, and packing given the large volume of samples and bottleware involved. All sampling packing activities were conducted in accordance with AECOM's QAPP.

High Volume Event General Summary

Oversight consisted of observations of in-river activities conducted by CPG contractor AECOM. Ocean Surveys Incorporated provided vessels, and Gravity Environmental (Gravity) provided sampling support. Review of the USGS gauging station at Dundee Dam indicated that maximum flow approached 600 cfs.

Using two dedicated peristaltic pumps, field crews pumped surface water through a PR2900 sampling system and simultaneously filled a carboy; crews periodically changed filters in the sampling equipment when necessary. While the carboy was filling, water was continuously homogenized using a magnetic stir plate, and three inch decontaminated Teflon coated magnetic stir bar.

Upon completion of pumping, the carboy was sampled by cutting the end of the intake tubing to an appropriate length, and reversing the flow in the peristaltic pump. Bottles were filled for particulate organic carbon (POC), dissolved organic carbon (DOC), and suspended solids concentration (SSC).

Once it was determined that the appropriate volume of water flowed through the sampling system, filters used to separate solids, and sorption medium consisting of a polyurethane foam (PUF) cartridge were collected for chemical analysis. CDM Smith accepted split samples of carboy water for POC, DOC, and SSC analysis, and filters and PUF cartridges.

Summary of Daily Activities

The following is a summary of daily activities observed during CDM Smith's oversight of CWCM activities:

Saddle River, Second River and RM 10.2 (December 10, 2012 Small Volume Event)

CDM Smith oversight staff observed boat-based sample collection at RM 10.2. In addition, sampling activities on the Saddle River and Second River were also observed. At each location, a YSI water quality instrument obtained a profile of real-time measurements through the water column, followed by the collection of surface water via pump and tubing mounted to the instrument. Saddle and Second River surface water samples were collected at mid river depths, while RM 10.2 surface water samples were collected from approximately 3 feet above river bottom, and 3 feet below river surface.

CDM Smith oversight staff collected split samples at the Second River and RM 10.2 locations. Split samples and corresponding CPG samples are presented in Table 1. Copies of CDM Smith's signed chain of custody can be found in Attachment 3.

RMs 1.4, Tidal 1, and Tidal 2 (December 11, 2012 Small Volume Event)

CDM Smith oversight staff observed boat-based sample collection at RM 1.4, Tidal 1 at RM 2.5 and Tidal 2 at RM 1.95. At each location a YSI water quality instrument obtained a profile of real-time measurements through the water column, followed by the collection of surface water from approximately 3 feet above river bottom, and 3 feet below river surface via pump and tubing mounted to the instrument.

Per AECOM's QAPP, samples were collected four times over the period of one tidal cycle at each location beginning with max flood tide and ending at low slack tide. Oversight crews observed one sampling event at each of the above mentioned RMs starting at RM 1.4 (maximum ebb tide) followed by RMs 1.95 and 2.50 (low slack tide). Split samples and corresponding CPG samples are presented in Table 1. Copies of CDM Smith's signed chain of custody can be found in Attachment 3.

RM 10.2 (December 17, 2012 High Volume Event)

On Monday December 12, 2012, CDM Smith oversight staff observed the collection of surface water samples in support of the high volume CWCM event. Samples were collected from RM 10.2 and above Dundee Dam. Oversight staff observed field activities at RM 10.2.

Field work was delayed approximately 5 hours while field crews were setting up sampling equipment.

During sampling, crews found that suspended solids were higher than anticipated, most likely due to overnight rainfall. Because of this, target samples volumes were revised at Dundee Dam and RM 10.2 to 300 liters (L) and 100 L, respectively. It took crews approximately 3 hours of pumping, stopping multiple times to change filters, to obtain the 100 L at RM 10.2.

CDM Smith accepted split samples of carboy water for POC, DOC, and SSC analysis, and filters and PUF cartridges. Split samples and corresponding CPG samples are presented in Table 1. Copies of CDM Smiths signed chain of custodies can be found in Attachment 3.

QAPP Compliance

All field activities were conducted in accordance with AECOM's QAPP procedures.

Table 1
Cooperating Parties Group and CDM-Smith Split Sample Identification
December 2012 Chemical Water Column Monitoring Oversight
Lower Passaic River Restoration Project
Lower Passaic River, New Jersey

| Location | CPG Sample ID | CDM Split Sample ID | QC Samples | Tide Event | Collection Date | Analysis |
|-------------------|--------------------|--------------------------|-------------|-------------|-----------------|---|
| RM 10.2 | 12H-CE04-T102-BS | 12H-CE04-T102-BS-C | | maximum ebb | 12/10/2012 | PAH/Alkyl PAHs, pesticides, PCB congeners, PCDD/PCDF, metals plus Ti (total and dissolved), mercury (total and dissolved), methyl mercury (total and dissolved), hexavalent chromium (dissolved), TOC, DOC, POC, SSC, TDS |
| Second River | 12H-CE05-T2R1-AS | 12H-CE05-T2R1-AS-C | MS/MSD ** | NA | 12/10/2012 | |
| RM 1.4 | 12H-CE04-T014-AS | 12H-CE04-T014-AS-C | | maximum ebb | 12/11/2012 | |
| RM 1.4 | 12H-CE04-T014-AS | 12H-CE04-T014-AS-CX | Duplicate * | maximum ebb | 12/11/2012 | |
| RM 1.95 (Tidal 2) | 12H-CE01-TTR2-BS | 12H-CE01-TTR2-BS-C | | low slack | 12/11/2012 | |
| RM 1.4 | 12H-CE04-T014-BS | 12H-CE04-T014-BS-C | | maximum ebb | 12/11/2012 | DOC, POC, SSC |
| RM 10.2 | 12I-CE05-T102-BW01 | 12I-CE05-T102-BW01-SW-C | | | 12/17/2012 | PCB congeners, PCDD/PCDF |
| RM 10.2 | 12I-CE05-T102-BM01 | 12I-CE05-T102-BM01-PUF-C | | | 12/17/2012 | |
| RM 10.2 | 12I-CE05-T102-BM02 | 12I-CE05-T102-BM02-PUF-C | | | 12/17/2012 | |
| RM 10.2 | 12I-CE05-T102-BP01 | 12I-CE05-T102-BP01-PUF-C | | | 12/17/2012 | |
| RM 10.2 | 12I-CE05-T102-BP01 | 12I-CE05-T102-BP01-SS-C | | | 12/17/2012 | |

CPG - Cooperating Parties Group

DOC - dissolved organic carbon

ID - identification

MS/MSD - matrix spike/matrix spike duplicate

NA - not applicable; tributaries were not sampled over the course of a full tidal cycle

PAH - polycyclic aromatic hydrocarbon

PCB - polychlorinated biphenyl

PCDD/PCDF - polychlorinated dibenzodioxins/polychlorinated dibenzofurans

POC - particulate organic carbon

QC - quality control

SSC- suspended solids concentration

TDS - total dissolved solids

Ti - titanium

TOC - total organic carbon

* - field duplicate sample of CDM split sample 12H-CE04-T014-AS-C

** - MS/MSD only for PAH/Alkyl PAHs, total and dissolved mercury and methyl mercury, dissolved hexavalent chromium, TOC, POC and DOC

Attachment 1
Photographs of Field Activities

Photo 1. Clean hands dirty hands procedure at RM 10.2



Photo 2. Sample collection at RM 10.2



Photo 3. Member of CDM Smith field team observes co-worker accepting split-samples at RM 1.4 due to limited room on CPG boat



Photo 4. High volume post PUF sample collection



Attachment 2

Copies of Oversight Field Logbook Notes

| PAGE | REFERENCE | DATE |
|------|---|------|
| | PC- Pat Connelly | |
| | GM- George Molnar | |
| | CWCM- Chemical water column monitoring | |
| | USACE- United States Army Corps of Engineers | |
| | JR- Jeff R. Kaush | |
| | RM- River Mile | |
| | SUCWCM- Small volume chemical water column monitoring | |

Abbreviation TOC 22-10-12³
Location Passaic River Date 12-10-12
Project / Client USACE
Round 5 SWM

PPE: Modified Level D
Weather: 40°F
Personnel: JR, GM, PC
(C.M. Smith)
Objective: R5 CWCW
Sampling
0700 C.M. Smith arrives
on site
0715 JR meets with PC,
GM to discuss today's plan
0900 JR arrives at Second
river. AECOM sets up
equipment at Second river.
* 0919 12H-CE05-TSRI-AS-C
split sample time
1140 AECOM completes collecting
samples at this location
1200 JR departs site
* 0652 PC split at 12H-CE04-T102-AS-C

12-10-12

4 Location Passaic Date 12-11-12
Project / Client USACE
Abbreviation J. 12-10-12

OPE: Modified Level D
Personnel: JR, PC (CDM-Smith)
Weather: 40° Fahrenheit J. 12-11-12
Objective: Collection of ~~104~~ and
tidal location 1.4

0650 JR arrives on site
and checks in with
AECOM.

0700 PC arrives on site
0715 JR and PC await
Miller's at CPG boat
ramp.

0745 Sandy Miller arrives on site

0815 CDM-Smith arrives at
Kearny boat ramp and
shoves off to RM
1.4. (helicopter pad area)

0845 Arrive at 1.4 RM.
PC goes on OSI
Ship. JR stays on
Sandy Miller due to
room restrictions. Ryan
McCarthy
AECOM tells JR
J. 12-11-12

5 Location Passaic Date 12-11-12
Project / Client USACE
J. Patterson

that the tidal 2 location
for CEOI will be located
at RM 1.95
*0906 12H-CEO4 - T014-B5-C
Split Sample accepted
*1004 12H-CEO4 - T014-AS-CX
CX duplicate Split Sample
accepted

1115 CDM Smith heads to
RM 1.95 (tidal 2).

1205 PC boards AECOM boat
in order to view and accept
Split Sample 5.

1230 Sample time 1230-135-C
2'

X 598258.80
Y 693942.16

1330 Observed Tidal 1 Sample
(A5) Collection at RM 2.5.
1400 depart site

J. 12-11-12

Location Lower Passaic River Date 8/30/12
 Project / Client CWCM - USACE

18:45 → SO advises Miller's Launch captain Jge McCarthy to proceed to Passaic Yacht Club.

19:10 → SO signs off on paperwork and departs Passaic Yacht Club en route home.

~~Sample Summary.~~

~~CDM collected split samples at RM 10.2:~~

~~12G-CE01-T102-BS-C~~

~~12G-CE01-T102-BS-CT (Field Duplicate)~~

8/30/12

Location Lower Passaic River Date 12/10/12
 Project / Client CWCM USACE

P. Connelly

07:00 - P. Connelly onsite at CPG facility. Meets with J. Rakowski and G. Molner. — PC

07:15 - H & S meeting with AECOM

07:20 - Miller's launch calls G.M. to say they will be delayed several hours due to heavy fog. — PC

08:30 - PC gets picked up by OSZ boat at Nutley ramp. Goes to RM 10.2. — PC

08:40 - At RM 10.2, AECOM is just finishing up collecting sample 12H-CE04-RS so CDM Smith will collect split of 12E-CE04-AS. — PC

08:52 - Sample time for 12E-CE04-AS-C. — PC

09:50 - Finished collecting sample
 $X = 592147.82$ Ft Water depth = 16.3 ft
 $Y = 719742.31$ Ft Sample depth = 3.2 ft

10:00 - PC heads upriver to CPG dock to put split sample cooler into CPG facility walk-in cooler where J. Rakowski will pick them up later to ship to lab.

P. Connelly 12/10/12

Location Lower Passaic River Date 12/10/12Project / Client CWCM / USACE

P. Connolly

11:15 - PC returns to location RM 10.2
to observe collection of 12H-CE01-T102-
-BS and 12H-CE01-

11:30 - Sample line for 12H-CE01-T102-

BS. Water depth = 11.7 feet and

Sample depth = 8.7 ft — PC

X = 592149.34 ft

Y = 719744.66 ft

Note = NJ State Plane, NAD83

11:58 - Finished collecting 12H-CE01-T102-BS

12:08 - Begin sampling 12H-CE01-T102-AS.

Pump ^{PC} Intake is 3 feet below surface.

This sample is MS/MSD — PC

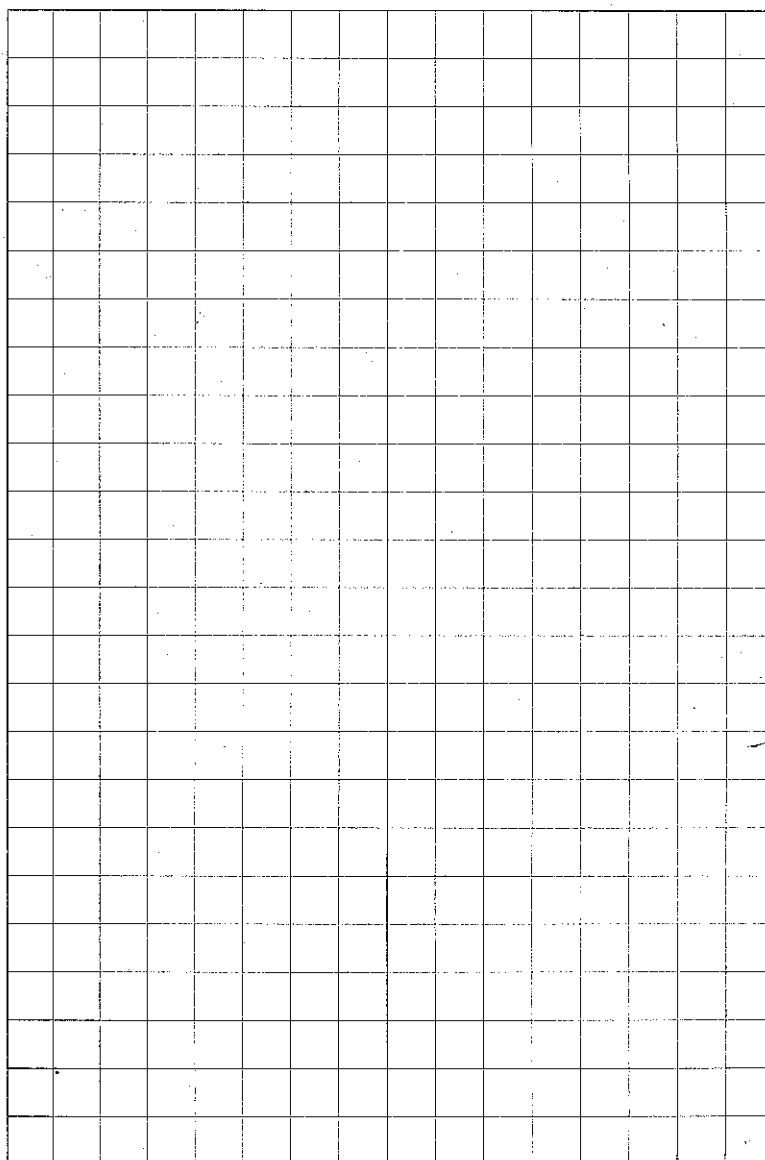
13:45 - Done sampling — PC

14:05 - P.C. offsite

Done
12/10/12

Location _____ Date _____

Project / Client _____



Location UPR Date 11-27-12
 Project / Client USACE Background Sediment
J. Rakowski

PPE: Modified Level D
 weather: 40° Fahrenheit, light rain
 Personnel: JR (CDM-Smith), OSI,
 Windward
 Objective: Continuation of Sediment
 Sampling.

0645 JR arrives onsite and
 awaits Windward's arrival.

0715 load boat
 0730 launch from elmwood

0740 park
 0745 Arrive at UPR-T19F
 UPR-T19F sample time

0750 Arrive at UPR-T19G
 0755 UPR-T19G sample time

0805 UPR-T19H sample time
 0833 UPR-T19I sample time

0900 Arrive at boat ramp
 0915 depart site

11-27-12

Location Lower Passaic River Date 12/10/12
 Project / Client USACE CWCN
Racette Point 5 Callahan notes

0700 George Moker meets with
 Pat Connolly & Jeff Rakowski @
 CIG facility. Crews meet up w/
 AECOM staff & they for health
 & safety mtg. Jeff goes w/ crews
 to 2nd river Pat to 10-2. Wake
 millers couldn't make it due to
 weather very foggy. Instead Pat
 will accompany OSI to collect @
 split.

Weather overcast/raining & SDS
 0815 Get accompanied by John Kelly
 of Dr. A. A. @ Third River.

0920 Crews begin sampling @ 3rd River
 not sampling just purging.

0930 crews begin sampling.
 Pat Connolly dropped sample at
 CIG facility under custody seal.
 Jeff & OSI will take one we're
 done. Crew @ 3rd river are
 collecting MS/MSD.

1045 Crews complete sampling @ third A! an
 Get heads back to CIG facility & John
 custody of samples. Patrick Connolly collect

Location Lower Passaic River Date 12/10/12

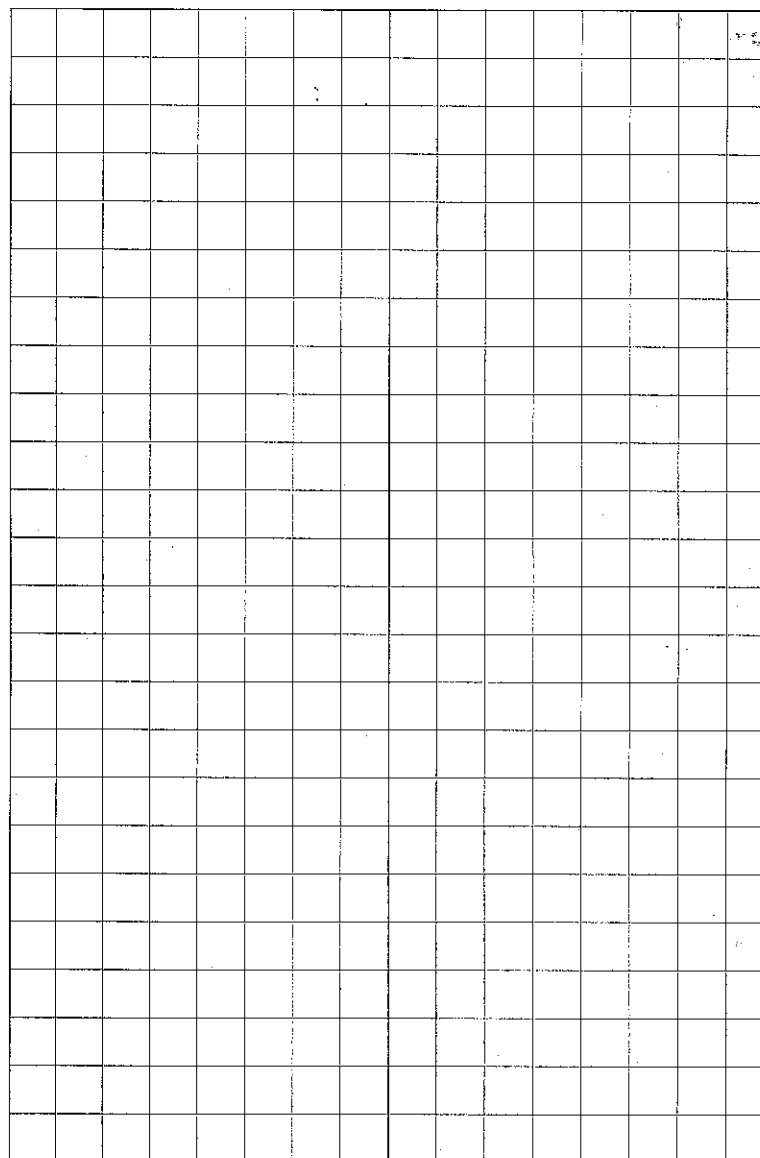
Project / Client USACE CWCW
Panther Hunt 5 C. holman notes

2 PM 12.2
1200 Gal. deposits C66 family



Location _____ Date _____

Project / Client _____



Location Lower Passaic River Date 12/10/12
Project / Client CWCM / USACE

Project / Client CWCM / USACE

P. connectivity

11:15 - PC returns to location RM 10.2 to observe collection of 12H-CE01-T102 - BS and 12H-CE01 -

11:30 - Sample time for 12# - CEU1 - T102 -
B5. Water depth = 11.7 feet and
Sample depth = 8.7 ft

$$X = 592149.34 \text{ Lt}$$

$$y = 719744.66 \text{ TL}$$

Note = NJ State Plane, NAD83

11:58 - Finished collecting 12th - CE01 - T102 - BS

12:08 - Begin sampling 12#-C001-T302-AS.
~~Pump~~ ^{rc} Intake is 3 feet below gnd surface.
 This sample is MS/MSD ——— rc

13:45 - Docu sampling — PC

14:05 - P.C. office

| | | | |
|---|--|--|--|
| 1 | | | |
|---|--|--|--|

Location Lower Passaic River Date 12-17-
Project / Client CLM/USACE

Project / Client

A. R. R. R. R. High

PPE: Modified Level D
 Weather: light rain 40°C
 Personnel: JRC DM-Smit
 O&T: AECOM, Gravity
 Objective: oversight and
 collection of one split
 Example (High Volume env.

0705 JR arrives at CHC facility

0800 Health and Safety brief held

0805 depart CPG b
ramp in order to head
down-stream to RMI

0830 Arrive at RM 10.

0835 Gravity Environmental pe
sets up equipment

Location Lower Passaic River Date 12-17-12
 Project / Client USACE High Volume event
J. Nakamura

1054 Start purge on EPA pump in order to prime system

1119 AECOM starts to purge and prime their filter. All equipment is purged and calibrated.

1202 AECOM ~~sample~~ ^{purge} time 21.8 total depth 12-17-12

1215 pump on

1219 pump off

1240 Note - filters have been getting changed out at a faster than expected pace. Plenty of solids have been getting collected, but liquid volume has been minimal.

1302 pump on

1305 pump off - 4 liters collected. A total of 20.4 liters has been collected.

Total current depth to bottom 20.1
12-17-12

Location Lower Passaic River Date 12-17-12
 Project / Client USACE High Volume event
J. Nakamura

AECOM collects sample

Comp-1.

1320 pump on

1323 pump off

1327 pump on

1330 pump off

* 34.95 liters have been collected

1335 Post-puff Comp-2 sample collected

Current sampling depth is

post 3 15.2' below water surface

post 4 14.8' sample depth below water

1515 Nine post puff samples have been collected.

* 1524 split sample time

Sample id 12I-CE05-T102-BW01-C water sample

100 total liters was pumped at RM 10.2

1700 depart site

12I-CE05-T102-BW01-C (filter) PUFF BMO1, BMO2

12-17-12

Attachment 3
Copies of Signed Chain of Custodies

| Items/Reason | Relinquished by | Date | Received by | Date | Time |
|--------------|-----------------|----------|-------------|------|------|
| | J.R. | 12-10-12 | | | |
| | | | | | |
| | | | | | |
| | | | | | |

[illegible]

Cooler #:

Lab Phone: 8883730881

[illegible]

CarrierName: Hand Deliver AR 12-10-17

AirbillNo:

Passaic - F2L

Case Complete: False

Cooler #:

Lab: EPA-DESA laboratory

Lab Address: 2890 Woodbridge Ave

Lab Phone: 7323216707

[illegible]

| | |
|-----------------------|--------------------------|
| Special Instructions: | SAMPLES TRANSFERRED FROM |
| | CHAIN OF CUSTODY # |

| Items/Reason | Relinquished by | Date | Received by | Date | Time |
|--------------|-----------------|----------|-------------|------|------|
| | J.K. | 12-10-72 | | | |
| | | | | | |
| | | | | | |
| | | | | | |

CarrierName: Hand Deliver

AirbillNo:

Passaic - F2L

Case Complete: False

Cooler #:

No: 2-120712-144144-0024

Lab: EPA-DESA laboratory

Lab Address: 2890 Woodbridge Ave

Lab Phone: 7323216707

[illegible]

Special Instructions:

| |
|--------------------------|
| SAMPLES TRANSFERRED FROM |
| CHAIN OF CUSTODY # |

| Items/Reason | Relinquished by | Date | Received by | Date | Time | Items/Reason | Relinquished By | Date | Received by | Date | Time |
|--------------|-----------------|----------|-------------|------|------|--------------|-----------------|------|-------------|------|------|
| | J.R. | 12-13-12 | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

DateShipped: 12/11/2012
CarrierName: Hand Deliver
AirbillNo:

CHAIN OF CUSTODY RECORD

Passaic - F2L
Case Complete: False
Cooler #:

No: 2-120712-144144-0024

Lab: EPA-DESA laboratory
Lab Address: 2890 Woodbridge Ave
Lab Phone: 7323216707

| Lab # | Sample # | Location | Analyses | Matrix | Collected | Sample Time | Numb Cont | Container | Preservative | MS/MS D |
|-------|---------------------|----------|---|---------------|------------|-------------|-----------|-------------|--------------|---------|
| | 12H-CE01-TTR2-BS-C | Tidal 2 | Total Organic Carbon | Surface Water | 12/11/2012 | | 1 | 250 mL poly | 4 C | N |
| | 12H-CE01-TTR2-BS-C | Tidal 2 | Particulate/Dissolved organic carbon | Surface Water | 12/11/2012 | | 1 | 250 mL poly | 4 C | N |
| | 12H-CE01-TTR2-BS-C | Tidal 2 | Suspended solids/Total dissolved solids | Surface Water | 12/11/2012 | | 1 | 1 L poly | 4 C | N |
| | 12H-CE01-TTR2-BS-C | Tidal 2 | Dissolved Hexavalent Chromium | Surface Water | 12/11/2012 | | 1 | 250 mL poly | 4 C | N |
| | 12H-CE04-T014-AS-C | RM 1.4 | Total Organic Carbon | Surface Water | 12/11/2012 | | 1 | 250 mL poly | 4 C | N |
| | 12H-CE04-T014-AS-C | RM 1.4 | Particulate/Dissolved organic carbon | Surface Water | 12/11/2012 | | 1 | 250 mL poly | 4 C | N |
| | 12H-CE04-T014-AS-C | RM 1.4 | Suspended solids/Total dissolved solids | Surface Water | 12/11/2012 | | 1 | 1 L poly | 4 C | N |
| | 12H-CE04-T014-AS-C | RM 1.4 | Dissolved Hexavalent Chromium | Surface Water | 12/11/2012 | | 1 | 250 mL poly | 4 C | N |
| | 12H-CE04-T014-AS-CX | RM 1.4 | Total Organic Carbon | Surface Water | 12/11/2012 | | 1 | 250 mL poly | 4 C | N |
| | 12H-CE04-T014-AS-CX | RM 1.4 | Particulate/Dissolved organic carbon | Surface Water | 12/11/2012 | | 1 | 250 mL poly | 4 C | N |
| | 12H-CE04-T014-AS-CX | RM 1.4 | Suspended solids/Total dissolved solids | Surface Water | 12/11/2012 | | 1 | 1 L poly | 4 C | N |

| | |
|-----------------------|--------------------------|
| Special Instructions: | SAMPLES TRANSFERRED FROM |
| | CHAIN OF CUSTODY # |

[illegible]

[illegible]

CarrierName: FedEx

CHAIN OF CUSTODY RECORD

Passaic - F2L

Case Complete: False

No: 2-121012-202107-0026

Lab: Microbac Laboratories, Inc.

Lab Address: 250 W. 84th Drive

Lab Phone: 2197698378

| | |
|-----------------------|--------------------------|
| Special Instructions: | SAMPLES TRANSFERRED FROM |
| | CHAIN OF CUSTODY # |

| Items/Reason | Relinquished by | Date | Received by | Date | Time |
|--------------|-----------------|----------|-------------|------|------|
| | J.R. | 12-13-12 | | | |
| | | | | | |
| | | | | | |
| | | | | | |

CarrierName: FedEx

AirbillNo: 794266965107

Passaic - F2L

Case Complete: False

Cooler #:

No: 2-121012-201713-0025

Lab: Shealy Environmental

Lab Address: 106 Vantage Point Drive

Lab Phone: 8037919700

[illegible]

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|-----------------------|--|
| Special Instructions: | SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY # |
|-----------------------|--|

[illegible]

[illegible]

[illegible]